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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,424	12/01/2000	Hiroataka Kaji	YAMAH5.970A	4402

20995 7590 11/05/2003

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EXAMINER

PEREZ DAPLE, AARON C

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/727,424

Applicant(s)

KAJI ET AL.

Examiner

Aaron C Perez-Daple

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9/25/03.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 and 14-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This action is in response to Amendment filed 9/25/03 which has been fully considered.
2. **Claims 1-12 and 14-27** are presented for examination.
3. **Claim 13** is cancelled.
4. **Claims 26 and 27** are newly submitted.
5. This action is made FINAL.

### *Response to Arguments*

#### Objections

6. Objections to the drawings are withdrawn in view of applicant's amendment.
7. Objections to the abstract are withdrawn in view of applicant's amendment.
8. Objections to the title are withdrawn in view of applicant's amendment.
9. Objections to the specification are withdrawn in view of applicant's amendment.

#### Claim Rejections - 35 USC § 112

10. The rejection of **claim 8** under 35 USC 112 first paragraph is withdrawn in view of applicant's amendment.
11. The rejection of **claims 1-25** under 35 USC 112 first paragraph is withdrawn in view of applicant's amendment.
12. The previous rejection of **claims 14-17** under 35 USC 112 second paragraph is withdrawn in view of applicant's amendment. However, a new rejection of amended claims 11-27 has been applied under 35 USC 112 second paragraph (see below).

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13. Applicant's arguments with respect to claim 1-25 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Objections***

14. Amended **claim 1** is objected to because of the following informalities: line 11 recites "based a combination of on the user's" where it should recite --based on a combination of the user's--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Amended **claims 11-27** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As for claim 11, limitation (ii) of claim 11 recites "predetermined evaluation criterion." This implies that something is being evaluated. It is not clear to the examiner what is being evaluated and whether the applicant intends to claim a closed loop system (e.g. with feedback from the unitary apparatus) or an open loop system (e.g. without feedback). For the purpose of applying prior art, the examiner interprets that the applicant intends to claim a closed loop system with feedback from the unitary apparatus to the autonomous evolutionary process unit.
17. As for claim 12, line 4 recites the limitation "predetermined input information." The source of the input information is not clear to the examiner. Furthermore, if the input

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information is externally generated, it is not clear how it can also be “predetermined.” For the purposes of applying prior art, the examiner interprets that “predetermined” means not selected by the user.

18. As dependent claims, claims 13-27 suffer from the same deficiencies as their parent claims.

***Claim Rejections - 35 USC § 102***

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

20. **Claims 1-4, 6, 9, 11, 12, 14-17, and 26** are rejected under 35 U.S.C. 102(a) as being anticipated by Kamihira et al (EP 0957416) (hereinafter Kamihira).

21. As for claim 1, Kamihira teaches a method for optimizing operation of a machine assembly while being manipulated by a user, said machine assembly comprising plural replaceable devices, each device being operated by a control module, the input-output relationship of which control module is regulated by control parameters, said method comprising the steps of:

a) operating the machine using control modules [paragraph 0007, “To attain the foregoing...object is operating.”];

b) during step a), optimizing the input-output relationship of at least one control module by coding into template parameters [parameters 18, Fig. 1] fully or partially regulating the

control module, said templates being subjected to heuristic processing [paragraph 0089, “As described above...of time and effort.”], wherein output of the machine assembly is evaluated based on a combination of the user’s ultimate choice during the operation and a preselected target used separately, to obtain at least one fitted set of parameters at each evaluation [paragraphs 0079-0080, “As described above...interactive module.”]; and

c) operating the machine assembly using the optimized control module [paragraph 0089, “As described above...of time and effort.”; Fig. 5].

22. As for claim 2, Kamihira teaches the method according to claim 1, wherein the control module comprises a main control module [interpreted as comprising air/fuel ratio control module 33 and the associated evolution and learning units 23 and 27, Fig. 6] and an auxiliary control module [interpreted as comprising throttle control module 20 and the associated evolution and learning units 8 and 12, Fig. 6] for adjusting output of the main control module, and step (b) is conducted on the auxiliary control module [paragraphs 0079-0080, “As described above...interactive module.”].

23. As for claim 3, Kamihira teaches the method according to claim 2, wherein the main control module and the auxiliary control module are arranged in series [paragraph 0029, “Further, as shown...short period of time.”].

24. As for claim 4, Kamihira teaches the method according to claim 2, wherein the main control module and the auxiliary control module are arranged in parallel [Fig. 6; paragraph 0028, “Also, as shown in...through evolution growth.”].

25. As for claim 6, Kamihira teaches the method according to claim 1, wherein the heuristic processing is evolutionary computation, and the templates are chromosomes [paragraph

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0089, "As described above...of time and effort."; note that the evolved parameters or properties comprise chromosome templates].

26. As for claim 9, Kamihira teaches the method according to claim 1, wherein the machine assembly is a watercraft [paragraph 0030, "Next, an implementation...any type of vehicle)."].

27. As for claim 11, Kamihira teaches an optimization apparatus for optimizing an operation characteristic of a unitary apparatus that can be used as a combined apparatus by combining other apparatuses used by a user, the optimization apparatus comprising:

an optimization process device [control apparatus 10, Fig. 5] for optimizing the operation characteristic of the unitary apparatus, with a functional characteristic of the combined apparatus as an evaluation criterion, said optimization device comprising:

(i) a control module regulated by control parameters for controlling operation of the unitary apparatus [throttle control module 20, Fig. 6];

(ii) an autonomous evolutionary process unit for optimizing the operation of the control module by selecting a portion of the control parameters based on a predetermined evaluation criterion [learning layer 12, Fig. 6; paragraphs 0072-0073, "When the evolution...evolution/adaptation layer."];

(iii) an interactive evolutionary process unit for optimizing the operation of the control module by selecting another portion of the control parameters based on the user's choice during the operation of the unitary apparatus [evolution/adaptation layer 6, Fig. 6; paragraphs 0072-0073, "When the evolution...evolution/adaptation layer."].

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28. As for claim 12, Kamihira teaches the optimization apparatus of claim 11, wherein the control module is used as an auxiliary control module [throttle control module 20, Fig. 6], and the optimization apparatus further comprises a basic control module [fuel economy module 33, Fig. 6] for deciding a manipulated variable of the unitary apparatus based on predetermined input information, said auxiliary control module being arranged and connected in parallel to or in series with the basic control module [shown connected in parallel, Fig. 6].

The examiner further points out with respect to claim 12 that applicant has not claimed the specific arrangement shown in figures 1a and 1b, as asserted in applicant's argument with respect to claim 12. Specifically, applicant has not claimed the relationship between the input and output signals shown in figures 1a and 1b. Claim 12 could reasonably be interpreted to read on either embodiment presented by applicant in the argument for claim 12 (pg. 19 of the amendment).

29. As for claim 14, Kamihira teaches the optimization apparatus of claim 11, further comprising an autonomous evaluation unit for evaluating the operation of the unitary apparatus and providing the evaluation to the autonomous evolutionary unit [evaluation unit 7, Fig. 6].
30. As for claim 15, Kamihira teaches the optimization apparatus of claim 11, further comprising an evaluation input unit for inputting by the user an evaluation of the operation of the unitary apparatus to the interactive evolutionary unit [inherent for input of evaluation 4, Fig. 6].



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31. As for claim 16, Kamihira teaches the optimization apparatus of claim 14, wherein the optimization unit carries out operation with regard to optimization using heuristics [paragraph 0089, "As described above...of time and effort."].
32. As for claim 17, Kamihira teaches the optimization apparatus of claim 16 wherein the heuristics is an evolutionary calculation method [paragraph 0089, "As described above...of time and effort."].
33. As for claim 26, Kamihira teaches the method according to claim 1, wherein the evaluation of output of the machine assembly by the user's ultimate choice and that by the preselected target are switched based on time or the user's choice [paragraph 0078, "When the user reads...can be resumed."].

***Claim Rejections - 35 USC § 103***

34. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35. **Claim 5** is rejected under 35 U.S.C. 103(a) as being obvious over Kamihira (EP 0957416) in view of Aria et al (US 5,418,721) (hereinafter Aria). Kamihira does not specifically disclose a central control module and multiple local control modules wherein step (b) is conducted on the central control module. Aria teaches a supervisory control system in a vehicle with multiple local control modules each receiving signals from the

central control module and outputting signals to the respective replaceable devices [Fig. 1; col. 1, lines 32-49, "For example, there...a horn sound."].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kamihira by using local control modules and performing step (b) on a supervisory control module, because this would allow for supervisory control of multiple vehicle systems, as taught by Aria [col. 1, lines 32-49, "For example, there...a horn sound."].

36. **Claims 7, 8 and 27** are rejected under 35 U.S.C. 103(a) as being obvious over Kamihira (EP 0957416) in view of Bonissone et al (US 5,995,737) (hereinafter Bonissone). As for claims 7 and 8, Kamihira does not specifically disclose providing a fuzzy inference system regulated by preselected parameters. However, Bonissone discloses a method similar to that of claim 1 further comprising providing a fuzzy inference system regulated by preselected parameters, and the optimization step is conducted by at least one of the following:

- (i) revising the fuzzy rule matrix by extracting a section from the matrix and coding elements of the section into chromosomes [Fig. 7];

- (ii) modifying the configuration of the fuzzy rule matrix defined by membership functions by coding elements of the membership functions into chromosomes [Fig. 7]; or

- (iii) changing a level of an input of the parameters and a level of an output of the fuzzy inference system by coding elements of the levels into chromosomes [Fig. 7; col. 4, lines 45-64, "In this invention...the search space."].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Kamihira with Bonissone in order to allow for smooth control of the combined apparatus and minimal error of a controlled variable, as taught by Bonissone [col.

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1 line 55 - col. 2 line 7, "This invention...the velocity profiler."]. It would further have been obvious to one of ordinary skill in the art to evaluate by the user the output of the fuzzy inference system, since Kamihira teaches user evaluation of the output of the control system [paragraphs 0079-0080, "As described above...interactive module."].

37. As for claim 27, Kamihira does not disclose a fuzzy inference system. However, Bonissone teaches a method similar to claim 7, wherein the section extracted in (i) and/or the membership functions to be modified in (ii) are/is evaluated by the preselected target value [step 46, Fig. 7].

38. **Claims 10 and 18-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamihira (EP 0957416). As for claim 10, Kamihira teaches the application of a global control method to an electronic throttle (e.g. figure 5), and he further teaches the use of a global control system for any type of vehicle(e.g. col. 5 line 57 through col.7 line 2). A trim apparatus is a standard replaceable device on a watercraft. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kamihira such that the replaceable devices include a trim apparatus and an electronic throttle.

39. Claims 18-25 apply the generic control system of claim 11 to various embodiments, and they can be said to represent species of the generic control system of claim 11. Kamihira discloses a generic control system similar to applicant's which can be applied to a wide range of different embodiments where optimization or adaptation of a system to user preferences is important [col. 1, lines 34-54].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the control system of Kamihira to the various embodiments of claims 18-

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25, since Kamihira teaches the use of a generic control system for the purpose of adapting a system to the preferences of different users.

***Conclusion***

40. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,278,986, note Fig. 1; US 6,148,274, note user evaluation; US 6,549,830, note Fig. 2; US 6,529,815, note Fig. 1; US 6,549,815; US 6,405,122, note Fig. 1; US 6,397,113, note combination of user and pre-set evaluation; US 6,004,015, note user evaluation; US 5,963,444, note supervisory control system; US 4,760,275, note Fig. 1; US 5,806,052, note supervisory control system for vehicle; US 6,038,505, note supervisory control system for vehicle.

41. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703)305-4897. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703)305-0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

 10/24/03

Aaron Perez-Daple

  
ANIL KHATRI  
SUPERVISORY PATENT EXAMINER